AMENDMENTS TO THE CLAIMS

Claim 1 (Currently Amended) A three-dimensional shape drawing device for drawing a three-dimensional shape using a Z-buffer algorithm, the three-dimensional shape drawing device comprising:

a depth value calculation section for calculating a depth value of a pixel to be drawn;

a high order Z-buffer memory for retaining high order bits of a depth value of a pixel to be displayed as a front face, the depth value of the pixel to be displayed as the front face being from among depth values calculated by the depth value calculation section;

a low order Z-buffer memory for retaining low order bits of the depth value of the pixel to be displayed as the front face, a number of the low order bits retained in the low order Z-buffer memory being equal to or larger than a number of the high order bits retained in the high order Z-buffer memory;

a high order bit comparing section for reading the high order bits retained by the high order Z-buffer memory and comparing the read high order bits with high order bits of the depth value calculated by the depth value calculation section;

a low order bit comparing section for, when a result of the comparing performed by the high order bit comparing section indicates that the high order bits of the depth value calculated by the depth value calculation section have a same value as the high order bits of the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory, (i) reading the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory and (ii) comparing the read low order bits with low order bits of the depth value calculated by the depth value calculation section;

a record update section for, when the result of the comparing performed by the high order bit comparing section indicates that a depth indicated by the high order bits of the depth value calculated by the depth value calculation section is shallower than a depth indicated by the high order bits of the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory, updating (i) the high order bits of the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory and (ii) the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory, by using the depth value calculated by the depth value calculation section, and for, when a result of a comparison performed by the low order bit comparing section indicates that a depth indicated by the low order bits of the depth value calculated by the depth value calculation section is shallower than a depth indicated by the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory, updating the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory by using the depth value calculated by the depth value calculation section;

a pixel value calculation section for calculating a pixel value, which is information about the pixel to be drawn;

an image memory for retaining the pixel value calculated by the pixel value calculation section; and

a high order Z-buffer clearing section for initializing the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory with a predetermined value,

wherein the predetermined value indicates one of a shallowest depth value and a deepest depth value, such that, when the predetermined value is not the deepest depth value, the predetermined value is the shallowest depth value, and

wherein the pixel value calculation section calculates the pixel value when the result of the comparing performed by the high order bit comparing section indicates that the depth indicated by the high order bits of the depth value calculated by the depth value calculation section is shallower than the depth indicated by the high order bits of the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory and when the result of the comparing performed by the low order bit comparing section indicates that the low order bits of the depth value calculated by the depth value calculation section have a same value as the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory.

Claim 2 (Canceled)

Claim 3 (Cancelled)

Claim 4 (Previously Presented) The three-dimensional shape drawing device according to claim 1, wherein the low order bit comparing section updates the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory when the low order bits calculated by the depth value calculation section have a same value as the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory.

Claim 5 (Previously Presented) The three-dimensional shape drawing device according to claim 1, wherein, when the result of the comparing performed by the low order bit comparing section indicates that the low order bits calculated by the depth value calculation section have a same value as the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory, the high order bit comparing section performs, for a next pixel, a comparison of high order bits of depth values.

Claim 6 (Cancelled)

Claim 7 (Previously Presented) The three-dimensional shape drawing device according to claim 1, further comprising a low order Z-buffer clearing section for initializing the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory.

Claim 8 (Previously Presented) The three-dimensional shape drawing device according to claim 1,

wherein, when the depth indicated by the high order bits of the depth value calculated by the depth value calculation section is determined to be shallower than the depth indicated by the high order bits of the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory, the high order bit comparing section adds a flag to the high order bits of the depth value calculated by the depth value calculation section,

wherein, when the depth indicated by the low order bits of the depth value calculated by the depth value calculation section is determined to be shallower than the depth indicated by the

low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory, the low order bit comparing section adds a flag to the low order bits of the depth value calculated by the depth value calculation section, and

wherein, when the flag is added to the high order bits of the depth value calculated by the depth value calculation section, the record update section updates the high order bits of the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory and the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory, and when the flag is added to the low order bits of the depth value calculated by the depth value calculation section, the record update section updates either (i) only the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory, or (ii) both the high order bits of the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory and the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory.

Claim 9 (Previously Presented) The three-dimensional shape drawing device according to claim 1, wherein the high order bits and the low order bits are respectively stored in the high order Z-buffer memory and the low order Z-buffer memory which is physically separated from the high order Z-buffer memory.

Claim 10 (Previously Presented) The three-dimensional shape drawing device according to claim 1, wherein the high order bits and the low order bits are respectively stored in the high

order Z-buffer memory and the low order Z-buffer memory which has a same physical configuration as the high order Z-buffer memory.

Claim 11 (Cancelled)

Claim 12 (Currently Amended) A three-dimensional shape drawing method for drawing a three-dimensional shape using a Z-buffer algorithm, the three-dimensional shape drawing method comprising:

calculating a depth value of a pixel to be drawn;

reading high order bits from a high order Z-buffer memory retaining high order bits of a depth value of a pixel to be displayed as a front face, the depth value of the pixel to be displayed as the front face being from among depth values calculated by the calculating of the depth value, and comparing the high order bits read by the reading with high order bits of the depth value calculated by the calculating of the depth value of the pixel to be drawn;

when the high order bits of the depth value calculated by the calculating of the depth value are determined, by the comparing of the high order bits, to have a same value as the high order bits of the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory, (i) reading low order bits from a low order Z-buffer memory retaining low order bits of the depth value of the pixel to be displayed as the front face, a number of the low order bits retained in the low order Z-buffer memory being equal to or larger than a number of the high order bits retained in the high order Z-buffer memory, and the depth value of the pixel to be displayed as the front face being from among the depth values calculated by the

calculating of the depth value, and (ii) comparing the read low order bits with low order bits of the depth value calculated by the calculating of the depth value;

updating the high order bits of the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory and the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory, using the depth value calculated by the calculating of the depth value, when a depth indicated by the high order bits of the depth value calculated by the calculating of the depth value is determined, by the comparing of the high order bits, to be shallower than a depth indicated by the high order bits of the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory, and updating the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory using the depth value calculated by the calculating of the depth value, when a depth indicated by the low order bits of the depth value calculated by the calculating of the depth value is determined, by the comparing of the low order bits, to be shallower than a depth indicated by the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory,

calculating a pixel value, which is information about the pixel to be drawn;

retaining, in an image memory, the pixel value calculated by the calculating of the pixel value; and

initializing the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory with a predetermined value,

wherein the predetermined value indicates one of a shallowest depth value and a deepest depth value, such that, when the predetermined value is not the deepest depth value, the predetermined value is the shallowest depth value, and

wherein the calculating of the pixel value calculates the pixel value when a result of the comparing of the high order bits indicates that the depth indicated by the high order bits of the depth value calculated by the calculating of the depth value is shallower than the depth indicated by the high order bits of the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory and when a result of the comparing of the low order bits indicates that the low order bits of the depth value calculated by the calculating of the depth value have a same value as the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory.

Claim 13 (Previously Presented) The three-dimensional shape drawing method according to claim 12, wherein when, at the comparing of the low order bits, the low order bits calculated by the calculating of the depth value are determined to have a same value as the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory, the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory are updated.

Claim 14 (Previously Presented) The three-dimensional shape drawing method according to claim 12, wherein when, at the comparing of the low order bits, the low order bits calculated by the calculating of the depth value are determined to have a same value as the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory, a comparison of high order bits of depth values is performed for a next pixel.

Claim 15 (Previously Presented) The three-dimensional shape drawing method according to claim 12, further comprising

initializing the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory.

Claim 16 (Cancelled)

Claim 17 (New) The three-dimensional shape drawing device according to claim 1, wherein the predetermined value is the shallowest depth value.